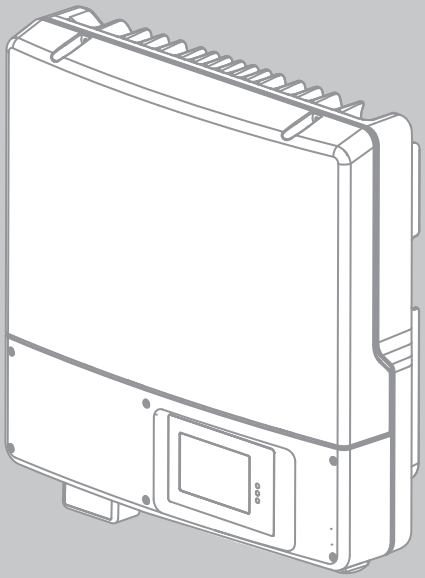
Wind Power Inverter

WINDY BOY 3000TL / 3600TL / 4000TL / 5000TL

User Manual



WB3-5TL-21-BA-en-10 | TBEN-WB3-5TL-21 | Version 1.0

EN

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1 Information on this Document

Validity

This document is valid for the following devices types as of firmware version 2.10:

- WB 3000TL-21
- WB 3600TL-21
- WB 4000TL-21
- WB 5000TL-21

Target Group

This document is intended for end users.

Symbols

Symbol	Explanation
⚠ DANGER	Indicates a hazardous situation which, if not avoided, will result in death or serious injury
⚠ WARNING	Indicates a hazardous situation which, if not avoided, can result in death or serious injury
⚠ CAUTION	Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury
NOTICE	Indicates a situation which, if not avoided, could result in property damage
i	Information that is important for a specific topic or goal, but is not safety-relevant
☐	Indicates an essential requirement for achieving a specific goal
☑	Desired result
✖	A problem that might occur

Nomenclature

Complete designation	Designation in this document
Small wind turbine system	Small wind turbine system, plant
SMA *Bluetooth*® Wireless Technology	*Bluetooth*
Windy Boy	Inverter, product

Abbreviations

Abbreviation	Designation	Explanation
AC	Alternating Current	–
DC	Direct Current	–
EC	European Community	–
LED	Light-Emitting Diode	–
SWTS	Small Wind Turbine System	–
VDE	Verband der Elektrotechnik Elektronik Informationstechnik e.V.	Association for Electrical, Electronic and Information Technologies

2 Safety

2.1 Intended Use

The Windy Boy is a transformerless wind energy inverter which converts the rectified alternating current generated by the small wind turbine system, or other energy converters based on permanent magnet generators, into grid-compatible alternating current, and feeds this into the electricity grid or stand-alone grid.

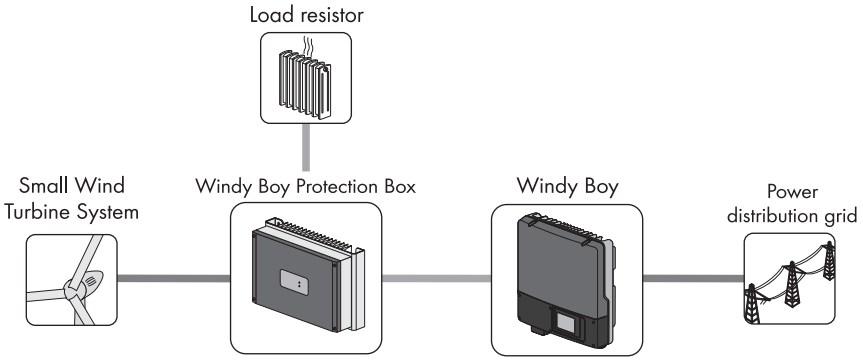

Figure 1: Structure of a small wind turbine system with Windy Boy

The Windy Boy is suitable for indoor and outdoor use.

Alternative uses of the Windy Boy not expressly recommended by SMA Solar Technology AG are not permitted.

For safety reasons, it is not permitted to modify the product or install components that are not explicitly recommended or distributed by SMA Solar Technology AG for this product.

The enclosed documentation is a part of this product.

- Read and adhere to the documentation.
- Keep the documentation in a convenient place for future reference.

2.2 Safety Precautions

Electric Shock

High voltages are present in the live components of the inverter. Touching these components can cause fatal electric shocks.

- Do not open the inverter.
- All work on the inverter (e.g. repairs, modifications) must be carried out by skilled persons only.

Burn Hazards

Some parts of the enclosure can become hot during operation.

- During operation, only touch the lower enclosure lid. Do not place any objects on the enclosure, as this can lead to yield losses.

Inverter Damage

Overvoltages can destroy the inverter.

- If the display message **DC overvoltage – Disconnect generator** is shown, inform your installer **IMMEDIATELY**.

The inverter can be damaged by removing the ESS under load.

- Always leave the ESS plugged in during operation.

3 Product Description

3.1 Windy Boy

The Windy Boy is a transformerless wind energy inverter which converts the rectified alternating current generated by the small wind turbine system into grid-compatible alternating current, and feeds this into the electricity grid or stand-alone grid.

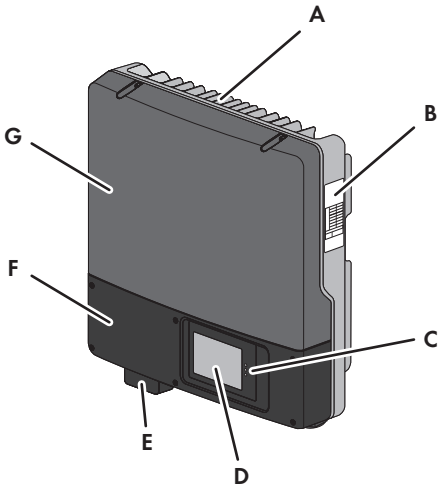

Figure 2: Design of the Windy Boy

Position	Description
A	Cooling fins
B	Type label
C	LEDs
D	Display
E	Electronic Solar Switch (ESS)*
F	Lower enclosure lid
G	Upper enclosure lid

* Always leave the ESS plugged in during operation. The ESS must only be removed by a skilled person, in order to ensure that no voltage is present in the inverter.

Symbols on the Inverter

Symbol	Description	Explanation
	Inverter	This symbol defines the function of the green LED. The green LED indicates the operating state of the inverter.
	Observe the documentation	This symbol defines the function of the red LED. The red LED indicates an error. • Contact installer.
	*Bluetooth*	This symbol defines the function of the blue LED. The blue LED indicates that communication via *Bluetooth* is activated.
	QR Code®	By scanning this code, the solar power professional installing the inverter can register the inverter and take part in the SMA bonus programme.
	Danger	If a second protective conductor is required, the enclosure must be additionally earthed.

3.2 Display

The display shows the current operating data of the inverter (e.g. current power, daily energy, total energy) as well as events or errors. The power and energy are displayed as bars in the diagram.

The display values may deviate from the actual values and must not be used for billing purposes. The values measured by the inverter are required for the operational control and to control the current to be fed into the electricity grid.

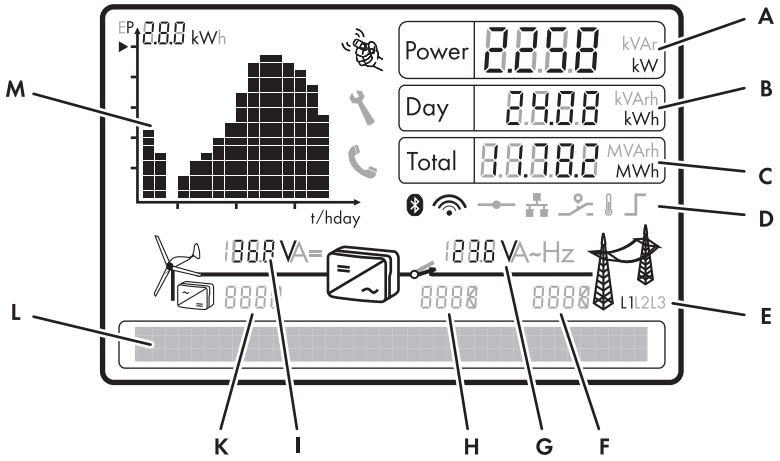

Figure 3: Design of the display (example)

Position	Description	Explanation
A	Power	Current power
B	Day	Daily energy
C	Total	Total amount of energy fed in until now
D	Active functions	The different symbols indicate which functions for communication, grid management or temperature derating are enabled or active.
E	Line conductor	Indicates which line conductor the displayed values are assigned to
F	Event number relating to the electricity grid	Event number of errors relating to the electricity grid
G	Output voltage/ output current	Alternates between output voltage and output current of a line conductor
H	Event number relating to the inverter	Event number of errors relating to the inverter

Position	Description	Explanation
I	Input voltage/input current	Alternates between input voltage and input current of one input
K	Event number relating to the small wind turbine system	Event number of errors relating to the small wind turbine system
L	Text line	Displays the event message or error message
M	Power and yield curve	Changes in power over the last 16 feed-in hours or the energy yields over the last 16 days. • In order to switch between the displays, tap once on the enclosure lid.

Symbols on the Display

Symbol	Description	Explanation
	Tapping	You can operate the display by tapping on the enclosure lid: • Tap once: to activate the backlight, to scroll to the next text line, to switch between the power graphs of the last 16 feed-in hours and the energy yields of the last 16 days • Tap twice in succession: the display successively shows the firmware version, the serial number or designation of the inverter, Bluetooth NetID, the set country data set and display language.
	Telephone receiver	Indicates that an error cannot be rectified on site • Contact installer.
	Spanner	Indicates an error that can be rectified on site by your installer. • Contact installer.
	*Bluetooth*	Indicates that an active *Bluetooth* connection is established
	*Bluetooth* connection quality	Indicates the quality of the *Bluetooth* connection to other *Bluetooth* devices.
	Speedwire	If a Speedwire data module is installed in the inverter, this symbol shows that there is a connection to a network

Symbol	Description	Explanation
	Webconnect function	If a Webconnect data module is installed in the inverter, this symbol shows that connection to Sunny Portal is possible
	Multi-function relay	Indicates that the multi-function relay is active
	Thermometer	Indicates that the power of the inverter is limited due to excessive temperature
	Power limitation	Indicates that the external active power limitation via the plant control is active
	Small wind turbine system with rectifier	–
	Inverter	–
	Grid relay	A closed grid relay indicates that the inverter is feeding into the electricity grid. An open grid relay shows that the inverter is disconnected from the electricity grid.
	Electricity grid	–

3.3 Type Label

The type label uniquely identifies the inverter. The type label is located on the right-hand side of the enclosure.

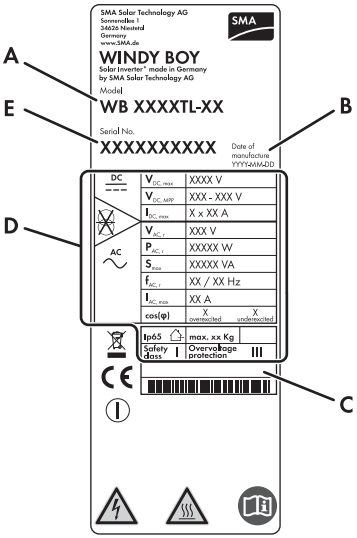

Figure 4: Design of the type label

Position	Description	Explanation
A	Model	Inverter device type
B	Date of manufacture	Inverter manufacture date (year-month-day)
C	Additional information	Field for additional information, e.g. country-specific standard information
D	Device-specific characteristics	–
E	Serial No.	Inverter serial number

You will require the information on the type label to use the inverter safely and when seeking customer support from the SMA Service Line. The type label must be permanently attached to the inverter.

Symbols on the Type Label

Symbol	Description	Explanation
	Danger to life due to high voltages	The product operates at high voltages. All work on the inverter must be carried out by skilled persons only.
	Risk of burns from hot surfaces	The product can become hot during operation. Avoid contact during operation.
	Observe the documentation	Observe all documentation that is supplied with the product.
	DC	Direct current
	Without transformer	The product does not have a transformer.
	AC	Alternating current
	WEEE designation	Do not dispose of the product together with household waste but in accordance with the locally applicable disposal regulations for electronic waste.
	CE marking	The product complies with the requirements of the applicable EC directives.
	Device class ID	The product is equipped with a wireless component and complies with device class 2.
IP65	Degree of protection	The product is protected against dust intrusion and water jets from any angle.
	Outdoor	The product is suitable for outdoor installation.
	RAL quality mark for solar products	The product complies with the requirements of the German Institute for Quality Assurance and Certification.

Symbol	Description	Explanation
	Certified safety	The product is VDE-tested and complies with the requirements of the German Equipment and Product Safety Act.
	C-Tick	The product complies with the requirements of the applicable Australian EMC standards.

3.4 *Bluetooth*

The inverter is equipped with a *Bluetooth* interface as standard and can communicate with special SMA communication products or other inverters (for information on supported products, see www.SMA-Solar.com).

If you wish to communicate via *Bluetooth*, you can protect the inverter with a plant password for the user.

All inverters are delivered with a default plant password for the user (0000) as standard. To protect the plant from unauthorised access, you must change the default plant password for the user using Sunny Explorer (for information on changing the plant password, refer to the Sunny Explorer help).

3.5 Slot for Communication Interface

The inverter can optionally be fitted with an extra communication interface (e.g., RS485).
This communication interface enables the inverter to communicate with special SMA communication products (for information on supported products, see www.SMA-Solar.com). The communication interface can either be retrofitted or installed ex works according to a specific order.

3.6 Slot for Multi-Function Interface

The inverter is equipped with a slot for multi-function interfaces. This slot is designed to connect a simple multi-function relay, an SMA Power Control Module or a fan retrofit kit. The multi-function interface can either be retrofitted or installed ex works according to a specific order.

Multi-Function Relay

The multi-function relay can activate and deactivate error messages, for example.

SMA Power Control Module

The SMA Power Control Module enables the inverter to implement grid management and is also equipped with a multi-function relay.

Fan Retrofit Kit

The fan retrofit kit provides additional cooling of the inverter in the event of high ambient temperatures and is likewise equipped with a multi-function relay. The fan retrofit kit and the SMA Power Control Module cannot be operated in parallel.

4 LED Signals

The LEDs indicate the operating state of the inverter.

Description	Status	Explanation
Green LED	Glowing	Operation
	Flashing	Requirements for connection to the electricity grid have not been met.
Red LED	Glowing	Failure • Contact installer.
Blue LED	Glowing	*Bluetooth* communication is activated.

5 Cleaning the Inverter

- **NOTICE**

  Damage to the display by use of cleaning agents

  - If the inverter is dirty, clean the enclosure lid, the display and the LEDs using only clean water and a cloth.

6 Glossary

Bluetooth

Bluetooth is a radio technology that allows the inverter and other communication products to communicate with each other. For *Bluetooth* communication, the *Bluetooth* devices do not need to be within sight of each other.

Energy

Energy is the power that a system can supply or consume within a certain time unit. Energy is measured in Wh (watt hours). If, for instance, your inverter feeds in for half an hour at 3,000 W and half an hour at 2,000 W, it will have fed a total of 2,500 Wh into the electricity grid.

Power

Power is the product of voltage and electrical current strength. Power is measured in W (watts). The power shown in the display is an instantaneous value. It indicates the power that your inverter is currently feeding into the electricity grid.

7 Contact

If you have technical problems, first contact your installer. The following information is required in order to provide you with the necessary assistance:

- Inverter device type
- Inverter serial number
- Firmware version of the inverter
- Special country-specific settings of the inverter (if applicable)
- Type and number of small wind turbine systems connected
- Installation location and installation altitude of the inverter
- Three-digit or four-digit event number and display message of the inverter
- Optional equipment, e.g. communication products
- Use of the multi-function relay (if available)

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Legal Restrictions

SMA Factory Warranty

The current warranty conditions come enclosed with your device. These are also available online at www.SMA-Solar.com and can be downloaded and are available on paper from the usual sales channels if required.

Trademarks

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